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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of                      Atty. Docket No.: 2551-026  
Douglas M. BLAIR  
Appln. No.: 09/881,234                      Group Art Unit: 1631  
Filing Date: Jun. 14, 2001                      Examiner: Smith, C.

For: APPARATUS AND METHOD FOR PROVIDING SEQUENCE DATABASE  
COMPARISON

\* \* \* \* \*  
REPLY BRIEF TRANSMITTAL  
\* \* \* \* \*

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Enclosed, please find:

1. Appellant's Reply Brief.

Respectfully submitted,

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APPELLANT'S BRIEF ON APPEAL  
U.S. Application No. 09/881,234

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For: **APPARATUS AND METHOD FOR PROVIDING SEQUENCE DATABASE  
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\* \* \* \* \*  
APPELLANT'S REPLY BRIEF UNDER 37 C.F.R. § 41.41  
\* \* \* \* \*

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

In accordance with the provisions of 37 C.F.R.  
§41.41, Appellant submits the following:

**I. REAL PARTY IN INTEREST**

The Examiner's Answer is correct in regard to the real  
party in interest.

**II. RELATED APPEALS AND INTERFERENCES**

The Examiner's Answer is correct in regard to the  
related appeals and interferences.

**III. STATUS OF CLAIMS**

The Examiner's Answer is correct in regard to the  
status of the claims.

IV. STATUS OF AMENDMENTS

Neither the Appeal Brief nor the Examiner's Answer were correct in regard to the date of the amendment to the specification filed in November 2002. The correct date the amendment was filed by Appellant is November 25, 2002.

V. SUMMARY OF THE INVENTION

The Examiner's Answer is correct in regard to the summary of the invention.

VI. ISSUES

The issues on appeal have been narrowed since the Examiner's Answer has found the arguments in the Appeal Brief with respect to **Grounds 1**, **Grounds 2**, and **Grounds 3** to be persuasive and the rejections withdrawn (see pages 10-11 of the Examiner's Answer).

The remaining issues on appeal are:

**Grounds 4** - Are claims 1 and 13, and all the remaining claims dependent thereon, indefinite under the second paragraph of 35 U.S.C. § 112 due to the term "said task definition" lacking a proper antecedent basis in the claims?

**Grounds 5** - Are claims 1, 4, 6-13, and 18-23 unpatentable over the publication to Smith et al. (1996) in view of the publication to Altschul et al. (1990) and U.S. Patent No. 5,862,325 to Reed et al. as being obvious?

VII. ARGUMENTS

*Grouping of Claims*

The Examiner's Answer erroneously cites to 37 CFR §1.192 to allege that the claims stand or fall together (see page 3, paragraph (7)).

37 CFR §1.192 was removed and reserved on August 12, 2004, effective September 13, 2004 (see 69 FR 49959). The proper standard concerning whether claims stand or fall together is found in 37 CFR §41.37(c)(1)(vii). So long as Appellant has argued the claims separately, there has been no waiver and the Board must consider the patentability of the claims separately.

*Claim Rejections - 35 USC §112*

***Grounds 1, 2, and 3***

The rejections with respect to **Grounds 1, 2, and 3** have been withdrawn. However, Appellant traverses the statement in the Examiner's Answer that "the term 'efficient' is being reasonably interpreted as very broad." As submitted in the Appeal Brief, the term "efficient" has a specific meaning within the art. As previously presented by Appellants, the term "efficient" is not used in a vacuum, but rather is claimed with respect to an "efficient structure" and an "efficiently encoded representation of alignment."

Indeed, as stated in the Appeal Brief, the present specification lists examples of an "efficient structure" and efficient encoding in the field of bioinformatics.

Likewise, as submitted in the Appeal Brief, the cited art of record to Matsumoto et al. discusses "the most efficient way to represent" DNA sequences is "two bits for each symbol" and the cited prior art of Altschul et al. discusses compressing "the database by packing 4

nucleotides into a single byte" (p. 405, col. 1), which, because a byte consists of 8 bits, is the same as 2-bits per nucleotide.

Furthermore, additional evidence that the concept of efficient encoding has a specific meaning in the art of bioinformatics was previously submitted to the Patent Office. Varre et al. is a 1999 article published in *Bioinformatics* and, with respect to encoding scripts for sequence comparison, discloses:

"To be comparable, descriptions have to be written in the same language. We use binary language *because efficient encoding procedures are known*. As DNA is made up from 4 ( $=2^2$ ) possible bases, each of them might be encoded over 2 (the exponent) bits. A  $n$ -bases long sequence is thus encoded over  $2n$  bits." (Emphasis added)

Appellants submit that the subjective documentary evidence illustrates that the term "efficient structure" as used within the claim term "packing said data into an efficient structure" and word "efficiently" as used in the term "efficiently encoded representation of alignment" have definite and specific meanings to one of skill in the art, and that it is therefore erroneous to interpret the terms differently.

#### ***Grounds 4***

Claims 1 and 13 were rejected as indefinite under the second paragraph of 35 U.S.C. § 112 due to the term "said task definition" lacking a proper antecedent basis in the claims.

In discussing Appellants arguments, the Examiner's Answer erroneously alleges that "'said task definition' is equally applicable to be referring to other 'task definition' recitationss previously found in the claims"

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(emphasis added). This argument misrepresents the claim language since there is only one other recitation of "task definition," the one that occurs in the term "a task definition for each task," which, as illustrated below, inherently is related to plural task definitions.

Indeed, Appellants submit that all previous recitations in the claims, except for one, refer to plural task definitions since the claim defines "tasks" as plural, mentions "task definitions" twice as plural, and recites "a task definition for each task," which is inherently plural since there are plural tasks. However, the context of only one prior occurrence of "task definition" is singular: "all parts of a task definition and data elements referenced by said task definition."

The argument in the Examiner's Answer, that the examiner never suggested claim language to Appellants under M.P.E.P. 2173.05(e) to improve the clarity or precision of the language used because "it is unclear as to which" task definition Appellant intended "said task definition" to refer to, is disingenuous. Appellant has responded repeatedly to this rejection to submit what "said task definition" refers to, yet the examiner still did not suggest any claim language. Furthermore, Appellants submit that a phrase relating "all parts of" and "data elements referenced by" are clearly related to the same task definition.

The Examiner's Answer further argues that *Ex Parte* Porter "does not appear to be relevant to the instant application as Ex parte Porter deals with claim scope issues..." Appellant submits that the Examiner's Answer clearly fails to understand that the ultimate reasoning for

a rejection under 35 U.S.C. §112 based upon a "lack of antecedent basis" is, in fact, based on the scope of the claim. Indeed, with respect to antecedent basis, *Ex parte Porter* has held that if the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite.

*Claim Rejections - 35 USC §103*

***Grounds 5***

Claims 1, 4, 6-13, and 18-23 were rejected under 35 U.S.C. 103 are being obvious over the publication to Smith et al. (1996) in view of the publication to Altschul et al. (1990) and U.S. Patent No. 5,862,325 to Reed et al.

*No Motivation to Combine*

In responding to Appellant's arguments related to a lack of a motivation to combine references, the Examiner's Answer cites to alleged motivation in paragraphs 1 & 2 of page 455 of Smith et al. related to the desirability of an "improved interface to molecular biology-related search and analysis services on the WWW." As Smith et al. is the primary reference in the obviousness rejection, it is unclear *why* it would be desirable to modify Smith et al. with any secondary references when Smith et al. already includes the desirable features related to improvements to analysis server sites, simplified access, and improved analysis resources.

Again, as previously submitted, M.P.E.P. 2141.02 requires that an invention be considered *as a whole*. The present invention, *as a whole*, is drawn to a method or system for comparing a query dataset N to a subject dataset M using not only a network, but a *distributed computing*

platform. A client computer in the claimed system and method divides the query dataset  $N$  into  $n_N$  data elements having a size within a specified range, divides the subject dataset  $M$  into  $n_M$  data elements having a size within said specified range, and determines a number of tasks for an entire comparison of datasets  $N$  and  $M$  as  $n_N \times n_M$ . The client computer then sends all data elements and task definitions to a master CPU of a master-slave distributed computing platform, and the master CPU sends a task definition and its associated data elements for each task to one of a plurality of slave CPUs of the distributed computing platform. The slave CPUs of the distributed computing platform perform the tasks (inherently in parallel) and return the results to the master CPU.

In contrast, none of Smith et al., Altschul et al. or Reed et al. even mentions distributed computing. In making the rejection, the Final Office Action erroneously looks to *Merriam-Webster* for the definition of "system" instead of looking to the broadest reasonable interpretation consistent with the specification as required by M.P.E.P. 2111. Looking to *Merriam-Webster* for the definition of "system" is not consistent with the distributed computing platform disclosed in the specification.

In addressing this issue, the Examiner's Answer points out that "the words of a claim must be given their plain meaning unless applicant has provided a clear definition in the specification" and that "no clear and concise definition of 'distributed computing' was set forth in the specification." Appellant notes, however, that these arguments only serve to *amplify* the completely fallacious nature of the rejection.



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First, the Examiner's Answer did not interpret "distributed computing" or "distributed computing platform," but rather "system." Second, claim 1 does not even mention "system," the term allegedly given its plain meaning from *Merriam-Webster*, but rather "a master central processing unit (CPU) of a master-slave distributed computing platform" and a "plurality of slave CPUs." Claim 13 uses "system" in the preamble, but still claims "a master central processing unit (CPU) of a master-slave distributed computing platform" and a "plurality of slave CPUs." Indeed, the explicit language of the rejection illustrates that the term "system" was construed relative to Smith et al., not the claim terms: "Smith et al. discloses...which represents a 'system' which is defined by the online Merriam-Webster dictionary as..." (see Examiner's Answer, p. 5, l. 9-10).

Instead of interpreting the language of the claims, the Examiner's Answer confirms that it is Smith et al. that has been interpreted. The rejection clearly interprets a term from Smith et al., not a *claim term*, and is thus improper. Indeed, Appellant submits that the plain meaning of "a master central processing unit (CPU) of a master-slave distributed computing platform" and a "plurality of slave CPUs" is as previously submitted on March 9, 2004: the terms "master CPU," "slave CPU," and "master-slave distributed computing platform" have established meanings to one of skill in the art; A master CPU controls and directs the actions (tasks) of the slave CPUs.

In regard to Appellant's argument that Smith et al., as a whole, *teaches against* the present invention in teaching the use of a batch system that processes various

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sequence searches serially "one at a time" at a single site (the BCM Search Launcher server, see Abstract, lines 14-17 and page 461, column 2, discussing batch processing) instead of in parallel at multiple slave CPUs, as found in the present invention, the Examiner's Answer alleges that "the instant claims do not recite parallel use limitations." This allegation is erroneous.

The claims recite "sending a task definition for each task from the master CPU to one of a plurality of slave CPUs," "sending data elements referenced by said task definition to said slave CPU," "performing each task on a slave CPU," and "returning task results for each task to said master CPU" to inherently define parallel processing. Indeed, the purpose of a distributed computing platform is to distribute the problem being solved to a plurality of computers to have multiple parts of the problem solved in parallel instead of sequentially.

The Examiner's Answer fails to address the argument that Smith et al. is merely a client-server system for providing a search launcher WWW interface and merely provides access to existing WWW services on remote servers. No matter how the Examiner's Answer twists or mischaracterizes Smith et al. (i.e., "Smith et al. describes... promoting a distributed information space by filling out an HTML form..."), it is a fact that neither the client nor the BCM server include any step or software for splitting up a  $N \times M$  dataset comparison into  $n_N \times n_M$  tasks for computation on a plurality of slave CPUs. Likewise, it is a fact that client search requests in Smith et al. are processed serially and that each search request is sent to a single remote site. A fair reading of Smith et al.

illustrates that the disclosed system is merely a WWW gateway to pre-existing search services and that it can perform some pre-processing in the form of batch entry and post-processing in the form of adding links to results. It does nothing to solve the problems existing in the prior art, such as (1) that sequence-to-database comparisons (as illustrated in fig. 1 of Smith et al.) require large RAM requirements for efficient processing or (2) that typical BLAST queries over a network involve sending inefficient ASCII (256-bit) characters (as illustrated by the "cut and paste" sequence entry disclosed by Smith et al.).

With respect to Appellant's argument that the secondary reference Altschul et al., as a whole, teaches away from the present invention by teaching dataset-to-dataset comparison on a single machine, the Examiner's Answer apparently argues that the primary reference Smith et al. teaches "the ability to use multiple computers." While it is unclear why the ability to use multiple computers such as by having "a batch client interface for Unix and Macintosh computers" (abstract) or "using a plurality of servers that can return search results" (allegedly at p. 455) as cited in the Examiner's Answer teaches anything except batch or serial processing, it does not overcome the fact that, as a whole, Altschul et al. teaches away from the presently-claimed distributed computing.

The Examiner's Answer further erroneously alleges that Altschul et al. teaches "division of a dataset into  $n_N \times n_M$  elements." As previously submitted, although Altschul et al. discloses the comparison of two random sequences  $n$  and  $m$ , it nowhere suggests dividing the problem further, let

alone dividing it into tasks for different computers to solve. The Examiner's Answer is incorrect in alleging that:

"Altschul et al. describe performing BLAST with two random sequences (data sets N and M) of lengths  $m$  and  $n$  in order to determine the probability of finding a segment pair with a score greater than  $S$  (cut off score, page 404, col. 2, second paragraph) where  $y = Kmn e^{-\lambda S}$  (page 405, col. 2, equation 1 and fourth paragraph) which represents determination of a number of tasks or points in a matrix in a comparison of two datasets (i.e., N and M) involving a multiplication of data elements  $n_N \times n_M$ , as stated in the instant claims 1 and 13."

The cited equation relates to the probability of finding a segment pair with a score greater than  $S$  where  $S = 1 - e^{-y}$  and has nothing to do "a multiplication of data elements  $n_N \times n_M$ ." In fact, Altschul et al. merely discloses the use of BLAST for comparisons "in a variety of contexts including straight-forward DNA and protein sequence database searches, motif searches, gene identification searches and in the analysis of multiple regions of similarity in long DNA sequences" (see abstract). Database searches are dataset (search term) to dataset (target database). Likewise, sequence (first DNA sequence) to sequence (second DNA sequence) are dataset to dataset comparisons. Altschul et al. does not teach or suggest any subdivision of these methods for handling larger datasets.

With respect to the citation of the non-analogous art of Reed et al., Appellant has no idea how the "looping processes" discussed in the Examiner's Answer relate to the claim limitations. The claim 6 and 18 require that each slave CPU perform "looping through query sequences from said query data element to perform setup, preprocessing and table generation for each row of comparisons," and "looping

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through subject sequences from said subject data element and, for each pair of query and subject sequences, performing a comparison using said executable element and finding results based on said at least one comparison parameter."

In contrast to this, Reed et al. has nothing to do query sequences or the setup, preprocessing, or table generation used in sequence comparison. The "looping" of Reed et al. is related to the publication of an entire object, by a query to determine object flag status (to find out what needs to be published) a first looping though the communication objects to read the associated recipients and a second loop to generate a communication object instance for each recipient.

While the Examiner's Answer seems to suggest that Reed et al. is analogous since it deals with computer data, Appellant notes that Reed et al. has nothing to do with computerized analysis, computation, or master/slave computation, but rather deals with data communication and processing. Even within class 709, the Patent Office recognizes that distributed data processing (709/201 where Reed et al. is classified) is different from master/slave computer controlling (709/208). Reed et al. is concerned with communicating data between a provider computer and a consumer computer. It has nothing to do with solving the problems encountered by those of ordinary skill in the art of bioinformatics when faced with the problems of large dataset comparisons, and therefore, one of ordinary skill in the art of bioinformatics would not look to Reed et al. for any teachings with respect to solving bioinformatics problems.

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A prior art reference is analogous if the reference is in the field of Appellant's endeavor or, if not, the reference is reasonably pertinent to the particular problem with which the inventor was concerned. *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). In the present case, Reed et al. is not from the field of bioinformatics or dataset comparison and is not pertinent to the problems of solving large dataset comparisons or the problems of a distributed computing platform.

While the Examiner's Answer is correct in stating that the reasons to combine references need not be the same as Appellants, the reasons to combine must come from the prior art and not from hindsight. "There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998)

The stated motivation for the combination in the Examiner's Answer is that "it would have been obvious one having ordinary skill in the art at the time the invention was made to compress data (as stated by Altschul et al. and Reed et al.) and to use looping processes (as stated by Reed et al.) in order to offer enhanced, integrated, easy-to-use, and time-saving techniques to a large number of useful molecular biology database search and analysis services for organizing and improving access to these tools for Genome researchers worldwide (Smith et al., page 459, col 1, third paragraph to col. 2, first paragraph)." However, none of this prior art teaches or fairly suggests use of a master/slave distributed computing platform and

the stated rejection lacks any reason for modifying the prior art to include this limitation.

Arguably, because Smith et al. teaches access to NCBI BLAST, it already includes the BLAST teachings of Altschul et al. and is completely clear that a combination of the two references/teachings is access to the WWW NCBI BLAST tool through the gateway of Smith et al. Since Smith et al. teaches the gateway for customer access to bioinformatics tools through the WWW, it is unclear why one would look to the data distribution and access methods of Reed et al.

*No Reasonable Expectation of Success*

The Examiner's Answer dismissed Appellant's arguments that one of ordinary skill in the art could not reasonably be expected to find Applicant's claimed invention for comparing large datasets obvious in view of a plurality of references that provide no guidance on handling large datasets or processing them in parallel over a network, by stating that "the instant claims do not recite large datasets or parallel processing."

In response, Appellant submits that the problem solved (large dataset comparisons) and inherent properties (datasets split into *smaller* tasks for computation are inherently large and parallel processing is inherent in the claimed distributed computing platform) are part of the invention "as a whole" inquiry under 35 U.S.C. §103 (see M.P.E.P. §2141.02).

*All Claim Limitations Not Shown*

*Claims 1, 12-13, and 23*

Smith et al. teaches the running of sequence-to-database searches, but fails to teach or fairly suggest

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numerous claim limitations required by all of the claims, including at least the following found in claims 1 and 13:

- dividing said query dataset N into  $n_N$  data elements having a size within a specified range [at client CPU];
- dividing said subject dataset M into  $n_M$  data elements having a size within said specified range[at client CPU];;
- determining a number of tasks for an entire comparison of datasets N and M as  $n_N \times n_M$ [at client CPU];;
- sending all data elements and task definitions to a master central processing unit (CPU) of a master-slave distributed computing platform,

wherein task definitions comprise at least one comparison parameter, at least one executable element capable of performing comparisons, a query data element identification(ID)/descriptor, and a subject data element ID/descriptor, and

wherein data elements are sent alternately from query and subject data elements;

- sending a task definition for each task from the master CPU to one of a plurality of slave CPUs when all parts of a task definition and data elements referenced by said task definition are available at said master CPU;
- sending data elements referenced by said task definition to said slave CPU; and
- performing each task on a slave CPU.

Again, Appellant reiterates that selection of a sequence to "clip and paste" into the HTML input form of Smith et al. is not a division of a query dataset N, but rather a specification of dataset N. No datasets in Smith et al. are ever divided, no tasks (plural for a single N-M



comparison) are determined, and no subject dataset elements are ever sent to a Master CPU. Despite the allegation in the Examiner's Answer that "[tasks are determined]" is not a limitation of the instant claims," both claim 1 and 13 clearly include "determining a number of tasks for an entire comparison of datasets N and M as  $n_N \times n_M$ ."

*Claim 4*

Despite teaching the use of redundancy reduction data compression, the prior art fails to disclose or teach the combined steps of:

- stripping all metadata from data;
- packing said data into an efficient structure;
- creating an index for said data and packing said index and said data in an uncompressed data structure; and
- compressing said uncompressed data structure into a data element using a redundancy reduction data compression method.

While the Examiner's Answer does not reject the substantially similar claim 16, it is further submitted that claim 4 is allowable for the same reasons as claim 16, and vice versa.

*Claims 6 and 18*

As submitted above, the "looping" of Reed et al. is unrelated to the present invention. As such, Appellant submits that the prior art fails to disclose or teach the combined steps of:

- uncompressing and unpacking data from said query and subject data elements;

- looping through query sequences from said query data element to perform setup, preprocessing and table generation for each row of comparisons;
- looping through subject sequences from said subject data element and, for each pair of query and subject sequences, performing a comparison using said executable element and finding results based on said at least one comparison parameter; and
- storing minimal information that will allow reconstruction of said result.

*Claims 7 and 19*

Despite allegations that a window in fig. 2 of Smith et al. meets the limitations of these claims, Smith et al. fails to disclose or suggest the combination of:

- storing index information for said query and said subject sequence;
- storing bounds information for start and stop of said query and subject sub sequences;
- storing data that quantify fulfillment of significance criteria for a significant match; and
- storing an efficiently encoded representation of alignment between said bounds corresponding to a high-scoring segment pair.

*Claim 8*

Despite allegations that a window in fig. 2 of Smith et al. meets the limitations of this claim, Smith et al. fails to disclose or suggest:

- storing a seed point and sum-set membership for each alignment for Basic Local Alignment Search Tool (BLAST).

*Claims 9-10 and 20-21*

Despite allegations about what Smith et al. discloses, Smith et al. clearly does not disclose determining tasks and therefore cannot possibly store results for tasks, including the claimed:

- storing task results in a task result file, said file including query and subject sequence data and metadata corresponding to the task that the results came from, metadata for the subject sequence, the partial subject sequence data corresponding to the subject bounds of the significant alignment result, and any other results data for each result in the task results

*Claims 11 and 22*

Despite allegations about what Smith et al. discloses, Smith et al. does not disclose splitting dataset comparisons into smaller tasks and therefore has no need to process multiple results, including the claimed:

- concatenating results from all BLAST reports.

*Reply to the Examiner's Response to Arguments*

**Ground 5**

The Examiner's Answer alleges that "Smith et al. teach a distributed computing platform." This is incorrect. Smith et al. teaches a search launcher for molecular-biology related search and analysis services available on the WWW (Internet). The alleged broad interpretation of "distributed computing platform" in the Examiner's Answer is not a reasonable interpretation consistent with the specification of the application as required by M.P.E.P. §2111.

With regard to the limitations in the specification not being read into the claims (page 15, lines 4-5 of the Examiner's Answer), Appellant notes that the claims already

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recite a "distributed computing platform" and that the broadest reasonable interpretation of the claim terms must be *consistent with the specification* under M.P.E.P. 2111. In the present case, the interpretation of the claimed "master-slave distributed computing platform" as somehow being covered by the "system" of Smith et al. is clearly inconsistent with the specification, in contravention of M.P.E.P. 2111.

If the Examiner's Answer had followed the guidelines of M.P.E.P. 2111.01(II) quoted on page 15 of the Examiner's Answer, it would have produced a standard definition for "distributed computing platform," not "system." Furthermore, the definition of system used by the examiner fails to consider the difference between "distributed" and "distributing."

The definition applied in the rejection is: "a group of devices or artificial objects or an organization forming a network especially for distributing something or serving a common purpose <a telephone *system*><a heating *system*><a highway *system*><a data processing *system*>." This definition fails to suggest any particular *arrangement* of the system, whereas a "distributed computing platform" requires that the computing is done in a *distributed, i.e., spread-out, manner*.

The Examiner's Answer repeatedly dismisses Appellant's arguments as "conclusory allegation[s] and unpersuasive without any sound reasoning," yet it is the Examiner's Answer that relies upon conclusory allegations and unsound reasoning. The Examiner's Answer alleges "Smith et al. teach a distributed computing platform," but this is conclusory. Any fair reading of Smith et al. illustrates

that it has nothing to do with distributed computing platforms and instead discloses a collection of Web pages for accessing bioinformatics services available on the WWW.

Likewise, the Examiner's Answer relies upon illogical reasoning such as use of a dictionary definition of a term in the prior art - "system" in Smith et al. - to somehow interpret the meaning of the claim term "distributed computing platform."

Furthermore, Appellant's arguments have not been conclusory and without sound reasoning. Appellant has repeatedly submitted that: Smith et al. is merely a client-server system for providing a search launcher WWW interface and merely provides access to existing WWW services on remote servers; neither the client nor the BCM server include any step or software for splitting up a  $N \times M$  dataset comparison into  $n_N \times n_M$  tasks for computation on a plurality of slave CPUs; client search requests in Smith et al. are processed *serially* and that each search request is sent to a single remote site; and a fair reading of Smith et al. illustrates that the disclosed system is merely a WWW gateway to pre-existing search services and that it can perform some pre-processing in the form of batch entry and post-processing in the form of adding links to results.

With respect to the motivation or suggestion to combine references, the Examiner states that "Smith et al. state the problem of hindering efficient use as well as improving and simplifying access and sources which is a proper motivation to combine." Regardless of whether this provides any motivation to look to Altschul et al. or Reed et al. (it doesn't since it only states a beneficial quality of the primary reference), Smith et al. only

suggests an improved interface with *serial batch processing* that *teaches against* the *distributed processing* of the present invention.

With regard to the claims not reciting the phrase "distributed computing" (page 14, lines 5-6 of the Examiner's Answer), Appellant notes that the remaining portion of the sentence in the Examiner's Answer, stating what the claim recites, *clearly includes the phrase*. Indeed, all the claims require a "distributed computing platform" with a "master CPU" and a plurality of "slave CPUs."

The Examiner's Answer, spanning pages 15-16 and again at page 19, lines 8-9, dismisses arguments related to "parallel use" since the term is not recited in the claims. Again, this fails to address the claims *as a whole*. The claims require dividing a dataset-dataset comparison into a plurality tasks, sending the tasks to be computed on a plurality of CPUs, and returning task results - the very definition of parallel computing.

Page 19, lines 12-15 of the Examiner's Answer states that "Smith et al. describes...a network for distributing [and] using the Internet for...promoting a distributed information space." Regardless of the veracity of this statement, "a network for distributing" and a "distributed information space" are clearly not a "distributed computing platform."

In regard to the Examiner's argument that not all limitations need to be found in each reference, Appellants note that (1) Smith et al. fails to teach or suggest that any particular dataset-to-dataset comparison is performed on more than one machine (the portal merely provides access

to existing services, and providing the same or other dataset-dataset comparisons on other machines, i.e., the "dataset comparisons at multiple sites," is not the same), (2) Altschul et al. teaches dataset-to-dataset comparison on a single machine, and (3) Reed et al. has nothing to do with dataset comparisons.

With regard to the teachings of Reed et al., the Examiner misses the point that there is no reason to combine Reed et al. with the bioinformatics references absent impermissible hindsight. Smith et al. teaches basic clip-n-paste submissions of queries to run against external databases. Ordinary results are returned. There is no suggestion of compression and there is no metadata, so there is no reason to strip it. Likewise, Altschul et al. teaches a basic sequence-to-sequence comparison on a local machine. Again, no metadata or compression is needed or desirable. The only reason to look to the diverse art of Reed et al. is the Appellant's disclosure.

Indeed, it is arguable that since a primary purpose of Smith et al. is to provide easy access to bioinformatics tools through a standard web browser, and that clip and paste entry is part of what makes it easy to use, that the proposed modification of Smith et al. with Reed et al. to add compression, etc. would destroy the principal of operation (standard browser) and thus be improper under M.P.E.P. 2143.01 since: (i) If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification, *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984); and (ii) If the proposed modification or combination of the

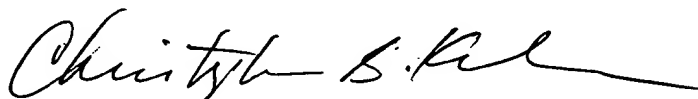
prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

Despite finding Appellant's arguments unpersuasive at page 20, lines 4-9, it is undisputable that the portion of the Office Action discussed in Appellant's arguments fails to match *claim limitations* with specific portions of the prior art. The Examiner's Answer fails to address the Appellant's argument that a client CPU in Smith et al., consisting of a computer with a browser, clearly fails to include instructions for dividing datasets N and M, as required.

#### CONCLUSION

For the above reasons, Appellant respectfully submits that the present claims meet the requirements of 35 U.S.C. 112 and that the Examiner has failed to make out a *prima facie* case of obviousness under 35 U.S.C. 103 with regard to claims 1, 4, 6-13, and 18-23 and asks that the obviousness rejection be reversed.

Respectfully submitted,       ,



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